abcam

ab110638

Anti-PMS2 antibody [EPR3947]

Anti-PMS2 antibody [EPR3947] (ab110638) is a rabbit monoclonal antibody detecting PMS2 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 30 publications

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR3947
Purification technique	Affinity purification Protein A
Dissociation constant	1.5×10^{-10} M
Concentration	1.62 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	-

WB

Tested

Species	Human
Dilution info	1/10000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/200
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/160
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

IHC-P

Tested

Species	Human
Dilution info	1/600
Notes	It is recommended to trial a dilution factor from 1:50 with IHC-P as the staining system sensitivity can be variable

Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Target data

See full target information PMS2

Function	Component of the post-replicative DNA mismatch repair system (MMR) (PubMed:30653781, PubMed:35189042). Heterodimerizes with MLH1 to form MutL alpha. DNA repair is initiated by MutS alpha (MSH2-MSH6) or MutS beta (MSH2-MSH3) binding to a dsDNA mismatch, then MutL alpha is recruited to the heteroduplex. Assembly of the MutL-MutS-heteroduplex ternary complex in presence of RFC and PCNA is sufficient to activate endonuclease activity of PMS2. It introduces single-strand breaks near the mismatch and thus generates new entry points for the exonuclease EXO1 to degrade the strand containing the mismatch. DNA methylation would prevent cleavage and therefore assure that only the newly mutated DNA strand is going to be corrected. MutL alpha (MLH1-PMS2) interacts physically with the clamp loader subunits of DNA polymerase III, suggesting that it may play a role to recruit the DNA polymerase III to the site of the MMR. Also implicated in DNA damage signaling, a process which induces cell cycle arrest and can lead to apoptosis in case of major DNA damages. Possesses an ATPase activity, but in the absence of gross structural changes, ATP hydrolysis may not be necessary for proficient mismatch repair (PubMed:35189042).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

Notes

To see more of the key markers and tools you need to study the hallmarks of cancer, including genome instability and mutation, please visit the following page.

Product Specifications
Anti-PMS2 antibody [EPR3947] (ab110638) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in Flow Cyt (Intra), ICC/IF, IHC-P, IP, WB in human samples.
Anti-PMS2 antibody [EPR3947] (ab110638) specifically detects PMS2 (UniProt ID: P54278; Molecular weight: 96kDa) and is sold in 100 µL and 1 mL selling sizes.

Quality and Validation

Abcam's high quality manufacturing and validation processes ensure Anti-PMS2 antibody [EPR3947] (ab110638) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.
The specificity of Anti-PMS2 antibody [EPR3947] (ab110638) has been confirmed by testing in knockout samples.
Anti-PMS2 antibody [EPR3947] (ab110638) has been cited over 36 times in peer reviewed journals and is trusted by the scientific community.

Related Products
Antibody clone EPR3947 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 647, Alexa Fluor® 555, PE, APC, HRP, Alkaline Phosphatase, Alexa Fluor® 594, Alexa Fluor® 568, Alexa Fluor® 750 (ab202835, ab203457, ab303014, ab303015, ab303016, ab308700, ab310420, ab312418, ab320964).

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	PMS2 also known as Postmeiotic Segregation Increased 2 or PMS2 MutL homolog is a protein that participates in DNA mismatch repair. It weighs approximately 96 kDa and often identifies as a member of the MutL protein family. PMS2 is ubiquitously expressed in the body with higher abundances in tissues that undergo rapid proliferation or possess a high mitotic index.
Biological function summary	PMS2 operates as part of the DNA mismatch repair (MMR) complex. It collaborates with other MutL homologs including MLH1 to form a heterodimer which is essential for repairing DNA replication errors. It safeguards genomic integrity and prevents mutations from accumulating in dividing cells serving important functions in cellular viability and genetic stability.
Pathways	PMS2 is involved in the DNA damage response and cell cycle regulation. The protein plays a vital role in the mismatch repair (MMR) pathway. PMS2 partners primarily with MLH1 within this pathway and both proteins work in conjunction to recognize and initiate repair on erroneous DNA sequences that emerge during replication preventing illegitimate recombination and chromosomal rearrangements.
Associated diseases and disorders	PMS2 mutations occur frequently in Lynch syndrome an inherited cancer predisposition disorder and Turcot syndrome a condition associated with colorectal cancer and brain tumors. MLH1 frequently associates with PMS2 in

these disorders as defects in either protein can impair mismatch repair leading to an increased risk of cancer.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

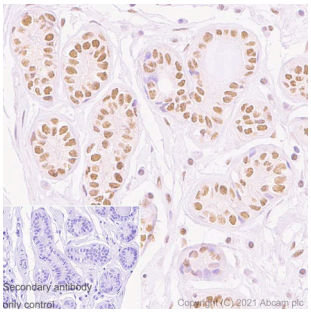
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

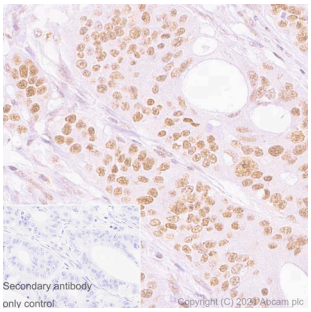
12 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PMS2 antibody [EPR3947] (ab110638)

PMS2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PMS2 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human breast tissue sections labeling PMS2 with Purified ab110638 at 1:600 (2.71 µg/ml). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) . Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control.

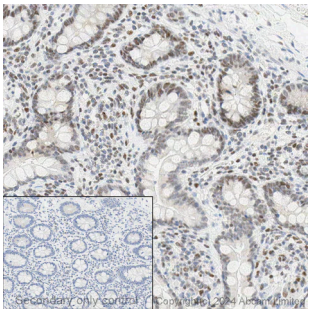


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PMS2 antibody [EPR3947] (ab110638)

PMS2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PMS2 antibody

Immunohistochemical analysis of paraffin-embedded Human colon cancer tissue labelling PMS2 with ab110638 at 1/100 followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on human colon cancer. The section was incubated with ab110638 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.

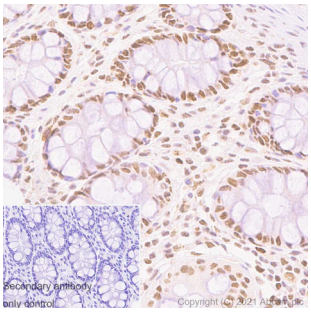


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PMS2 antibody [EPR3947] (ab110638)

Immunohistochemical analysis of formalin fixed paraffin embedded human colon labelling PMS2 with ab110638 at a concentration of 3µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins.

Anti-PMS2 antibody [EPR3947] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).



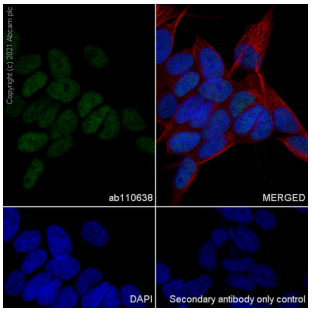
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PMS2 antibody [EPR3947] (ab110638)

PMS2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PMS2 antibody

Immunohistochemical analysis of paraffin-embedded Human colon tissue labelling PMS2 with ab110638 at 1/100 followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on human colon. The section was incubated with ab110638 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

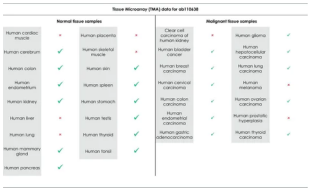
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Immunocytochemistry/ Immunofluorescence - Anti-PMS2 antibody [EPR3947] (ab110638)

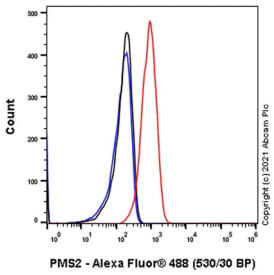
PMS2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-PMS2 antibody

Immunocytochemistry analysis of SH-SY5Y (Human neuroblastoma epithelial cell) cells labeling PMS2 with Purified ab110638 at 1:200 dilution (8 µg/ml). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PMS2 antibody [EPR3947] (ab110638)

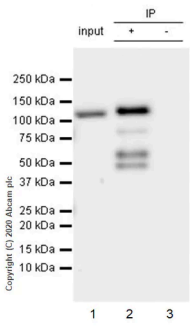
Tissue Microarrays stained for "Anti-PMS2 antibody [EPR3947]" using "ab110638"in immunohistochemical analysis. This table provides a detailed overview of positive (tick mark) and negative (cross mark) staining per sample type tested. The sections were pre-treated using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) for 20 minutes. The sections were incubated with ab110638 for 30 mins at room temperature followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). The immunostaining was performed on a Leica Biosystems BOND® RX instrument.



Flow Cytometry (Intracellular) - Anti-PMS2 antibody [EPR3947] (ab110638)

PMS2 Flow Cytometry (Intracellular) staining using rabbit Anti-PMS2 antibody

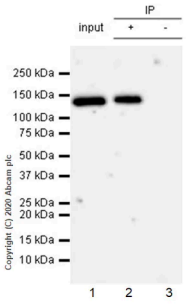
Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labelling PMS2 with Purified ab110638 at 1:160 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) secondary antibody was used at 1:2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunoprecipitation - Anti-PMS2 antibody [EPR3947] (ab110638)

Purified ab110638 at 1/50 dilution (2µg) immunoprecipitating PMS2 in HeLa whole cell lysate.
Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10µg
Lane 2 (+): ab110638 + HeLa whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab110638 in HeLa whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/5000 dilution) was used for Western blotting.
Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
Observed band size: 110 kDa
Lower bands are degradation bands and fresh lysate is recommended.
All lanes:
Immunoprecipitation - Anti-PMS2 antibody [EPR3947] (ab110638)

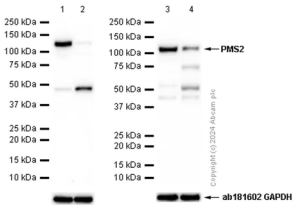
Predicted band size: 96 kDa



Immunoprecipitation - Anti-PMS2 antibody [EPR3947] (ab110638)

Purified ab110638 at 1/50 dilution (2µg) immunoprecipitating PMS2 in HeLa whole cell lysate.
Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10µg
Lane 2 (+): ab110638 + HeLa whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab110638 in HeLa whole cell lysate.
VeriBlot for IP Detection Reagent (HRP) (ab131366) (1/5000 dilution) was used for Western blotting.
Blocking Buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM/TBST.
Observed band size: 110 kDa
Lysate were made freshly and used in IP test immediately to minimize protein degradation.
Incubation time was 2h.
All lanes:
Immunoprecipitation - Anti-PMS2 antibody [EPR3947] (ab110638)

Predicted band size: 96 kDa



Western blot - Anti-PMS2 antibody [EPR3947] (ab110638)

Blocking and diluting buffer concentration: 5% NFDM/TBST.

ab181602 GADPH was used as a loading control.

Lower bands are degradation bands and fresh lysate is recommended to get desired WB result.

All lanes:
Western blot - Anti-PMS2 antibody [EPR3947] (ab110638) at 1/10000 dilution

Lane 1:
Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate, freshly made at 20 µg

Lane 2:
Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate at 20 µg

Lane 3:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate, freshly made at 20 µg

Lane 4:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 20 µg

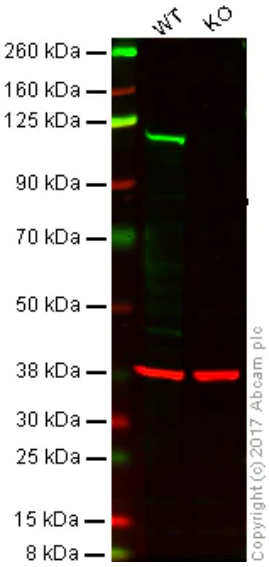
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 96 kDa

Observed band size: 120 kDa

Exposure time: 20s



Western blot - Anti-PMS2 antibody [EPR3947] (ab110638)

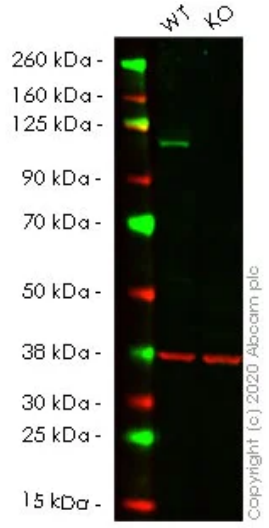
Lanes 1-2: Merged signal (red and green). Green - ab110638 observed at 120 kDa. Red - loading control, ab8245, observed at 37 kDa.
ab110638 was shown to specifically react with PMS2 in wild-type HAP1 cells. No band was observed when PMS2 knockout samples were used. Wild-type and PMS2 knockout samples were subjected to SDS-PAGE. ab110638 and ab8245 (Mouse anti GAPDH loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-PMS2 antibody [EPR3947] (ab110638) at 1/1000 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 30 µg

Lane 2:
PMS2 knockout HAP1 whole cell lysate at 30 µg

Predicted band size: 96 kDa



Western blot - Anti-PMS2 antibody [EPR3947] (ab110638)

PMS2 Western blot staining using rabbit Anti-PMS2 antibody

Lanes 1- 2: Merged signal (red and green). Green - ab110638 observed at 120 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab110638 was shown to react with PMS2 in wild-type HeLa cells in western blot. Loss of signal was observed when knockout cell line ab261776 (knockout cell lysate ab257142) was used. Wild-type HeLa and PMS2 knockout HeLa cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab110638 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye®800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye®680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-PMS2 antibody [EPR3947] (ab110638) at 1/1000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human PMS2 knockout HeLa cell lysate (ab257142) at 20 µg

Secondary

Lanes 1 - 2:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/20000 dilution

Lanes 1 - 2:
Western blot - Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 96 kDa

Observed band size: 120 kDa, 37 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.